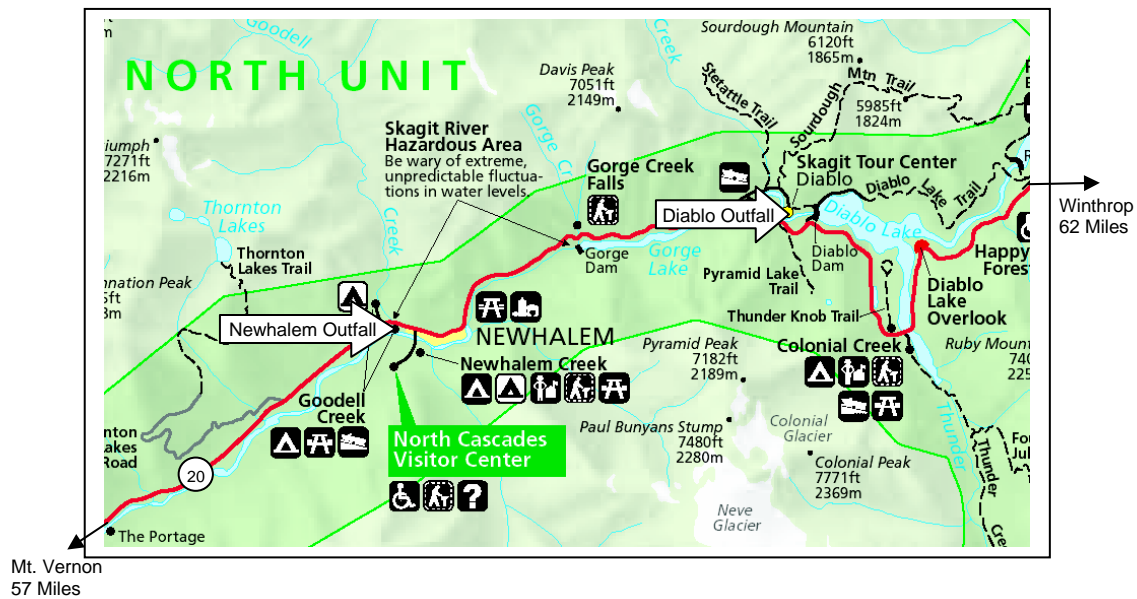


FACT SHEET FOR NPDES PERMIT WA-002967-0

SEATTLE CITY LIGHT - NEWHALEM



This fact sheet is a companion document to the draft National Pollutant Discharge Elimination System (NPDES) Permit for the Newhalem Wastewater Treatment Plant (WWTP). The fact sheet explains the nature of the proposed discharge, the Department of Ecology's (the Department's) decisions on limiting the pollutants in the wastewater, and the regulatory and technical basis for those decisions. The fact sheet and draft permit are available for review (see *Appendix A--Public Involvement* for more detail on the Public Notice procedures). A glossary of terms used in the fact sheet and permit are included in Appendix B.

GENERAL INFORMATION	
Applicant:	Seattle City Light 700-5 th Ave., Suite 3100 Seattle, WA 98104-5031 Phone (206) 386-4560
Responsible Official:	Superintendent, Seattle City Light (James Ritch, Acting)
Engineering Contact:	Jennie Goldberg (206) 684-3167
Facility Name and Address:	Newhalem Wastewater Treatment Plant Highway 20, Newhalem, WA (500 Newhalem St, Rockport, WA 98283)
Type of Treatment:	Extended Aeration (Secondary Treatment)
Discharge Location:	Skagit River, Class AA Latitude: 48° 40' 42" N Longitude: 122° 15' 20" W
Water Body ID Number:	WA-04-1110
Plant Contact:	Sam Pettigrew, Class III Operator (206) 233-2710

TABLE OF CONTENTS

Introduction	1
Background Information	1
Description of the Facility	1
History	1
Collection System Status	2
Treatment Processes	2
Discharge Outfall	2
Residual Solids	2
Permit Status	2
Summary of Compliance with the Previous Permit	3
Wastewater Characterization	3
Proposed Permit Limitations	3
Design Criteria	4
Technology-Based Effluent Limitations	4
Surface Water Quality-Based Effluent Limitations	6
Numerical Criteria for the Protection of Aquatic Life	6
Numerical Criteria for the Protection of Human Health	6
Narrative Criteria	6
Antidegradation	6
Critical Conditions	7
Description of the Receiving Water	7
Surface Water Quality Criteria	7
Mixing Zones	7
Whole Effluent Toxicity	10
Human Health	10
Sediment Quality	10
Ground Water Quality Limitations	10
Comparison of Effluent Limits with the Existing Permit Issued 7/28/98	11
Monitoring Requirements	11
Lab Accreditation	11
Other Permit Conditions	11
Reporting and Recordkeeping	11
Prevention of Facility Overloading	11
Operation and Maintenance (O&M)	12
Residual Solids Handling	12
Pretreatment	12
General Conditions	12

TABLE OF CONTENTS (cont'd)

Permit Issuance Procedures	12
Permit Modifications	12
Recommendation for Permit Issuance	12
References for Text and Appendices	13
Appendix A -- Public Involvement Information	
Appendix B -- Glossary	
Appendix C -- Technical Calculations - Dilution Model Calculations	
Appendix D -- Response to Comments	
Appendix E -- Layout of Newhalem Wastewater Treatment Plant	
Appendix F -- Newhalem Data, 1998 - 2002	

INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has authorized the State of Washington to administer the NPDES permit program. Chapter 90.48 RCW defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the State include procedures for issuing permits (Chapter 173-220 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see *Appendix A--Public Involvement* of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

This facility provides sewage treatment for houses occupied by Seattle City Light employees housed at Newhalem, City Light offices, and tourist wayside areas. The number of houses used by Seattle City Light employees has steadily decreased over the last several years. There are currently approximately 22 full time single family residences and 7 dorms/apartments/duplex buildings (3 full-time, 4 part-time), and 12 institutional/commercial buildings (stores, visitors center, etc.).

HISTORY

Prior to the early 1970's, sewerage for the Newhalem community was treated by an Imhoff tank (primary) treatment plant. A package aeration (secondary) treatment plant was designed in 1971 and was constructed in the early 1970's, eliminating the Imhoff tank and adding new sewer lines to serve the western housing area at Newhalem. The facility was expanded in 1984 to its present configuration.

COLLECTION SYSTEM STATUS

The Newhalem collection system serves a housing area, visitor center, and support buildings all owned by the permittee. There are no wastewater sources tributary to the system except those owned and controlled by the permittee.

TREATMENT PROCESSES

The Newhalem treatment facility is a Smith & Loveless package extended aeration plant with final clarifiers. The facility lay-out is shown in Appendix E. Sludge is removed from the final clarifier and held in an aerobic digester. The permittee replaced the chlorination system with ultraviolet disinfection in 1998. The Newhalem treatment plant has an approved design flow of 60,000 gpd.

DISCHARGE OUTFALL

The Newhalem outfall consists of a six inch cast iron pipe streambank outfall which discharges at invert elevation 468 ft, just below the water surface of the Skagit River adjacent to the treatment plant.

RESIDUAL SOLIDS

The treatment facility removes solids during the treatment of the wastewater at the headworks (grit and screenings) and at the secondary clarifier, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum, and screenings are drained and disposed of as solid waste. Treated sludge is wasted from the aerobic digester approximately every two months via septic tank pumper. The sludge is then transported to the Mount Vernon wastewater treatment plant for additional treatment and disposal.

PERMIT STATUS

The previous permit for this facility was issued on July 28, 1998. The previous permit placed effluent limitations on 5-day Biochemical Oxygen Demand (BOD₅), Total Suspended Solids (TSS), pH, and Fecal Coliform bacteria.

An application for permit renewal was submitted to the Department on January 28, 2003 and accepted by the Department on February 4, 2003.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility received its last inspection on October 19, 2000. During this Class I inspection, the effluent appeared clear and the facility was operating in compliance.

The Newhalem WWTP has had a spotty history of compliance with the previous NPDES permit (see shaded entries in Appendix F). During the period 1998-2002, the permittee reported no influent warnings and 16 effluent violations. The effluent violations were comprised of ten pH violations due to effluent pH being lower than 6.0, and six TSS related violations. There have been no violations since October 2000.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the NPDES application and in discharge monitoring reports (DMRs). A detailed summary of the data from the DMR reports is shown in Appendix F. Table 1 shows average effluent values for the period 1998-2002.

Table 1. Wastewater Characterization, 1998-2002

Parameter	Concentration or Value
Flow, Mo. Avg.	7,013 gpd
BOD, Mo. Avg.	2.9 mg/L
TSS, Mo. Avg.	11.6 mg/L
Fecal Coliform	1.48 / 100 ml
pH, minimum	6.3 std units
pH, maximum	7.3 std units

PROPOSED PERMIT LIMITATIONS

Federal and State regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the State of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not

controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. Effluent limits are not always developed for pollutants that may be in the discharge but not reported as present in the application. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of Ecology. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

DESIGN CRITERIA

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria. The design criteria for this treatment facility are as follows:

Table 2. Design Standards for the Newhalem WWTP

Parameter	Design Quantity
Monthly average flow (max. month)	60,000 gpd
BOD ₅ influent loading	110 lb/day
TSS influent loading	110 lb/day

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (federal) and in Chapter 173-221 WAC (state). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater. This level of treatment is often termed "Secondary Treatment".

The technology-based limits for pH, fecal coliform, BOD₅, and TSS listed in Table 3 are taken from Chapter 173-221 WAC.

However, since the Newhalem treatment plant outfall discharges to a segment of the Skagit River considered a "mountainous recreational area", "better than secondary" modified technology-based limits were imposed during previous permit cycles as required by the Department of Ecology's Policy WQ 23. This stringent water quality policy is no longer active; however it is being proposed that the "better than secondary" limits enforced during the previous permit cycles be upheld in this permit to preserve anti-backsliding measures. In addition, past performance of the Newhalem facility shows that these effluent limits can be consistently and reliably obtained.

Table 3. Technology-based Limits.

Parameter	Limit
pH	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
BOD ₅ (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L Average Monthly Limit = 0.5 mg/L Average Weekly Limit = 0.75 mg/L

It is intended that the following permit limitations will be imposed, reflecting an approximately 33% "better-than-secondary" strategy for BOD and TSS, as well as a fecal coliform limitation much more restrictive than required by WAC 173-220-130(3)(b) and 173-221-030(11)(b) for secondary treatment. The proposed permit limitations shown in Table 4 are unchanged from the previous permit for this facility.

Table 4. "Better than Secondary" Modified Technology-based Limits.

Parameter	Limit
pH	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 50 organisms/100 mL Weekly Geometric Mean = 100 organisms/100 mL
BOD ₅ (concentration)	Average Monthly Limit is the most stringent of the following: - 20 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 30 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 20 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 30 mg/L

Monthly effluent mass loadings (lbs/day) were calculated as the maximum monthly design flow (0.070 MGD) x Concentration limit (20 mg/L) x 8.34 (conversion factor) = mass limit 10 lb/day for BOD and TSS.

The weekly average effluent mass loading is calculated as $1.5 \times \text{monthly loading} = 15$ lbs/day for BOD and TSS.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the State of Washington.

ANTIDEGRADATION

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when receiving waters are of higher quality than the criteria assigned, the

existing water quality shall be protected. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

DESCRIPTION OF THE RECEIVING WATER

This facility discharges to the Skagit River, which is designated as a Class AA receiving water in the vicinity of the outfall. Other nearby point source outfalls include only the small upstream Diablo WWTP. There are not any known non-point sources of pollutants in the vicinity. Characteristic uses include the following:

water supply (domestic, industrial, agricultural); stock watering; fish migration, rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

Water quality of this class shall markedly and uniformly exceed the requirements for all or substantially all uses.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Fecal Coliforms	50 organisms/100 mL maximum geometric mean
Dissolved Oxygen	9.5 mg/L minimum
Temperature	16° C maximum or incremental increases above background
pH	6.5 to 8.5 standard units
Turbidity	less than 5 NTUs above background
Toxics	No toxics in toxic amounts

MIXING ZONES

The Water Quality Standards allow the Department of Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria

for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and is defined as follows:

Mixing Zone Description

The mixing zone for the Newhalem outfall extends upstream from the outfall pipe a distance of 100 feet, and downstream from the pipe 300 feet. It also extends out from the bank a distance equal to one fourth of the width of the Skagit River, which at that point is estimated to be 75 feet. Additionally, the mixing zone shall not utilize more than 25% of the 7-day, 10-year (7Q10) Skagit River low flow. The 7Q10 for the Skagit River at that point is 1177 cfs, according to U.S. Geological Survey reports for the period 1950 to 2001 (site #12178000, Skagit R at Newhalem).

The zone of acute criteria exceedance extends upstream and downstream of the outfall pipe 10% of the dimensions of the mixing zone, or 10 feet and 30 feet, respectively. The width of the zone of acute criteria exceedance is the same as that of the mixing zone, 75 feet. The zone of acute criteria exceedance shall not utilize more than 2.5% of the 7-day, 10-year Skagit River low flow.

The dilution factors of effluent to receiving water that occur within these zones have been determined at the critical condition by the use of the RIVPLUM5 mathematical dilution model. These chronic and acute dilution zone calculations are shown in Appendix C.

As described above, State Surface Water Quality Standards, regulation WAC 173-201A-100, place additional restrictions on the dilution factors which can be used for an outfall. Using an approved design flow at Newhalem of 60,000 gpd (= 0.0928 cfs), and the Skagit River 7Q10 of 1177 cfs, the regulatory limitations on the dilution factors were calculated. The results of both the mathematical and the regulatory dilution assessments are summarized below:

Chronic dilution factor, calculated by model	1236:1
Chronic dilution factor, regulatory maximum	3169:1
Acute dilution factor, calculated by model	391:1
Acute dilution factor, regulatory maximum	317:1

The more restrictive of each of these dilution factors will be used in this permit analysis; hence the Newhalem chronic dilution factor is 1236:1 and the acute dilution factor is 317:1, as shown in Table 5.

Table 5. Newhalem Dilution Factors

	Acute	Chronic
Aquatic Life	317:1	1236:1

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

The critical condition for the Skagit River is the seven day average low river flow with a recurrence interval of ten years (7Q10). Ambient data at critical conditions in the vicinity of the Newhalem WWTP outfall was taken from U.S. Geological Survey online water resource data which lists daily statistical flow data for the Skagit River at Newhalem for the period 1950 to 2001. From this report, the critical river flow in the vicinity of the outfall was determined to be:

7Q10 low flow = 1177 cfs.

BOD₅ -- Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, the “Better than Secondary” technology-based effluent limitation for BOD₅ was placed in the permit.

Temperature and pH -- Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, the technology-based effluent limitation for pH was placed in the permit, and no specific effluent limit was proposed for temperature.

Fecal coliform -- The proposed permit limit of 50 organisms/100 mL would meet water quality criteria in the Skagit River even with no dilution. As this outfall does have a modelled dilution of 1224 to 1, there is clearly no predicted violation of water quality criteria.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

No toxics were determined to be present in the discharge. Chlorine has been eliminated from the discharge. This facility switched to an ultraviolet light disinfection system in 1998.

WHOLE EFFLUENT TOXICITY

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing.

Toxicity caused by unidentified pollutants is not expected in the effluent from this discharge as determined by the screening criteria given in Chapter 173-205 WAC. Therefore, no whole effluent toxicity testing is required in this permit. The Department may require effluent toxicity testing in the future if it receives information that toxicity may be present in this effluent.

HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the applicant's discharge is unlikely to contain chemicals regulated for human health based on existing data or knowledge.

SEDIMENT QUALITY

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The Department has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate the Sediment Management Standards.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

This Permittee has no discharge to ground and therefore no limitations are required based on potential effects to ground water.

COMPARISON OF EFFLUENT LIMITS WITH THE EXISTING PERMIT ISSUED 7/28/98

The effluent limits proposed in this permit are the same as those in the existing permit issued July 28, 1998.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Sludge monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (July 1994) for treatment plants with design flows under 0.10 MGD.

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. The laboratory at this facility has been accredited for all effluent analyses required in the permit. The lab accreditation number is I066.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in proposed permit requirement S.4. to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S.4. restricts the amount of flow.

OPERATION AND MAINTENANCE (O&M)

The proposed permit contains condition S.5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems the Permittee is required in permit condition S7. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503, and by Ecology under Chapter 70.95J RCW and Chapter 173-308 WAC. The disposal of other solid waste is under the jurisdiction of the Whatcom County Health Department.

PRETREATMENT

This wastewater treatment facility has no tributary industrial users, and treats only wastewaters generated by the owner. Therefore, the owner will not be required to investigate or control industrial users, or to initiate a pretreatment program.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human

health, aquatic life, and the beneficial uses of waters of the State of Washington. The Department proposes that this permit be issued for 5 years.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

- 1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.
- 1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.
- 1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA office of Water, Washington, D.C.
- 1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.
- 1983. Water Quality Standards Handbook. USEPA office of Water, Washington, D.C.

Metcalf and Eddy.

- 1991. Wastewater Engineering, Treatment, Disposal, and Reuse. Third Edition.

Tsivoglou, E.C., and J.R. Wallace.

- 1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

Laws and Regulations(<http://www.ecy.wa.gov/laws-rules/index.html>)

Permit and Wastewater Related Information

(<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

- 1994. Permit Writer's Manual. Publication Number 92-109

Water Pollution Control Federation. 1976. Chlorination of Wastewater.

Wright, R.M., and A.J. McDonnell.

- 1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(E2). (Cited in EPA 1985 op.cit.)

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on September 3 and 10, 2002 in The Skagit Valley Herald to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on June 11, 2003, in The Skagit Valley Herald to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Northwest Regional office
3190 160th Ave SE
Bellevue, WA 98008

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (206)649-7160, or by writing to the address listed above.

This permit and fact sheet were written by Alison Evans.

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

AKART-- An acronym for “all known, available, and reasonable methods of prevention, control, and treatment”.

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

Average Weekly Discharge Limitation -- The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD₅--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

CBOD5 – The quantity of oxygen utilized by a mixed population of microorganisms acting on the nutrients in the sample in an aerobic oxidation for five days at a controlled temperature of 20 degrees Celsius, with an inhibitory agent added to prevent the oxidation of nitrogen compounds. The method for determining CBOD5 is given in 40 CFR Part 136.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring –Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User-- A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in State regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

Pass through -- A discharge which exits the POTW into waters of the-State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

- a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;
- b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)--

- 1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;
- 2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C--TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at (<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

APPENDIX C (cont'd) - Chronic Dilution Analysis

Spread of a plume from a point source in a river with boundary effects
 from the shoreline based on the method of Fischer *et al.* (1979) with
 correction for the effective origin of effluent. Revised 22-Feb-96

Facility: Seattle City Light - Newhalem STP
 Permit No: WA-002968-0
 Run Date: 3/10/2003

INPUT	
1. Effluent Discharge Rate (cfs):	0.0928
2. Receiving Water Characteristics Downstream From Waste Input	
Stream Depth (ft):	3.00
Stream Velocity (fps): <i>based on USGS 7Q10 = 1177 cfs (1990-2001)</i>	1.31
Channel Width (ft):	300.00
Stream Slope (ft/ft) or Manning roughness "n":	0.00450
0 if slope or 1 if Manning "n" in previous cell:	0.00
3. Discharge Distance From Nearest Shoreline (ft):	0.00
4. Location of Point of Interest to Estimate Dilution	
Distance Downstream to Point of Interest (ft):	300.00
Distance From Nearest Shoreline (ft):	0.00
5. Transverse Mixing Coefficient Constant (usually 0.6):	0.60
6. Original Fischer Method (enter 0) or <i>Effective Origin</i> Modification (enter 1)	0.00
OUTPUT	
1. Source Conservative Mass Input Rate	
Concentration of Conservative Substance (%):	100.00
Source Conservative Mass Input Rate (cfs*%):	9.28
2. Shear Velocity	
Shear Velocity based on slope (ft/sec):	0.659
Shear Velocity based on Manning "n":	
using Prasuhn equations 8-26 and 8-54 assuming hydraulic radius	
equals depth for wide channel Darcy-Weisbach friction factor "f":	#N/A
Shear Velocity from Darcy-Weisbach "f" (ft/sec):	#N/A
Selected Shear Velocity for next step (ft/sec):	0.659
3. Transverse Mixing Coefficient (ft ² /sec):	1.187
4. Plume Characteristics Accounting for Shoreline Effect (Fischer <i>et al.</i> , 1979)	
Co	7.89E-03
x'	3.02E-03
y'o	0.00E+00
y' at point of interest	0.00E+00
Solution using superposition equation (Fischer eqn 5.9)	
Term for n= -2	0.00E+00
Term for n= -1	5.35E-144
Term for n= 0	2.00E+00
Term for n= 1	5.35E-144
Term for n= 2	0.00E+00
Upstream Distance from Outfall to Effective Origin of Effluent Source (ft)	#N/A
Effective Distance Downstream from Effluent to Point of Interest (ft)	300.00
x' Adjusted for Effective Origin	3.02E-03
C/Co (dimensionless)	1.03E+01
Concentration at Point of Interest (Fischer Eqn 5.9)	8.09E-02
Unbounded Plume Width at Point of Interest (ft)	93.34
Unbounded Plume half-width (ft)	46.67
Distance from near shore to discharge point (ft)	0.00
Distance from far shore to discharge point (ft)	300.00
Plume width bounded by shoreline (ft)	46.67
Approximate Downstream Distance to Complete Mix (ft):	39671
Theoretical Dilution Factor at Complete Mix:	12678
Calculated Flux-Average Dilution Factor Across Entire Plume Width:	1972
Calculated Dilution Factor at Point of Interest:	1236

APPENDIX C (cont'd) - Acute Dilution Analysis

Spread of a plume from a point source in a river with boundary effects from the shoreline based on the method of Fischer *et al.* (1979) with correction for the effective origin of effluent. Revised 22-Feb-96

Facility: Seattle City Light - Newhalem STP
 Permit No: WA-002968-0
 Run Date: 3/10/2003

INPUT	
1. Effluent Discharge Rate (cfs):	0.0928
2. Receiving Water Characteristics Downstream From Waste Input	
Stream Depth (ft):	3.00
Stream Velocity (fps): based on USGS 7Q10 = 1177 cfs (1990-2001)	1.31
Channel Width (ft):	300.00
Stream Slope (ft/ft) or Manning roughness "n":	0.00450
0 if slope or 1 if Manning "n" in previous cell:	0.00
3. Discharge Distance From Nearest Shoreline (ft):	0.00
4. Location of Point of Interest to Estimate Dilution	
Distance Downstream to Point of Interest (ft):	30.00
Distance From Nearest Shoreline (ft):	0.00
5. Transverse Mixing Coefficient Constant (usually 0.6):	0.60
6. Original Fischer Method (enter 0) or <i>Effective Origin</i> Modification (enter 1)	0.00
OUTPUT	
1. Source Conservative Mass Input Rate	
Concentration of Conservative Substance (%):	100.00
Source Conservative Mass Input Rate (cfs*%):	9.28
2. Shear Velocity	
Shear Velocity based on slope (ft/sec):	0.659
Shear Velocity based on Manning "n":	
using Prasnun equations 8-26 and 8-54 assuming hydraulic radius equals depth for wide channel Darcy-Weisbach friction factor "f":	#N/A
Shear Velocity from Darcy-Weisbach "f" (ft/sec):	#N/A
Selected Shear Velocity for next step (ft/sec):	0.659
3. Transverse Mixing Coefficient (ft ² /sec):	1.187
4. Plume Characteristics Accounting for Shoreline Effect (Fischer <i>et al.</i> , 1979)	
Co	7.89E-03
x'	3.02E-04
y'o	0.00E+00
y' at point of interest	0.00E+00
Solution using superposition equation (Fischer eqn 5.9)	
Term for n= -2	0.00E+00
Term for n= -1	0.00E+00
Term for n= 0	2.00E+00
Term for n= 1	0.00E+00
Term for n= 2	0.00E+00
Upstream Distance from Outfall to Effective Origin of Effluent Source (ft)	#N/A
Effective Distance Downstream from Effluent to Point of Interest (ft)	30.00
x' Adjusted for Effective Origin	3.02E-04
C/Co (dimensionless)	3.24E+01
Concentration at Point of Interest (Fischer Eqn 5.9)	2.56E-01
Unbounded Plume Width at Point of Interest (ft)	29.52
Unbounded Plume half-width (ft)	14.76
Distance from near shore to discharge point (ft)	0.00
Distance from far shore to discharge point (ft)	300.00
Plume width bounded by shoreline (ft)	14.76
Approximate Downstream Distance to Complete Mix (ft):	39671
Theoretical Dilution Factor at Complete Mix:	12678
Calculated Flux-Average Dilution Factor Across Entire Plume Width:	624
Calculated Dilution Factor at Point of Interest:	391

APPENDIX D--RESPONSE TO COMMENTS

The following is a discussion of the comments received on the draft permit during the public comment period, and the actions which were taken in response to the comments.

Formal Comments Received from Permittee

Comment 1:

Permit, p. 9, *S3.E Noncompliance Notification*

Seattle City Light was concerned that “Immediately notify the Department of the failure to comply” was not specific enough, and that a 24 hour notification time should be specifically stated, as is worded in 40 CFR 122.41(l)(6)ii.

Response to Comment 1:

The wording has been changed to read: “*Notify the Department of the failure to comply immediately, but no later than 24 hours from the time the permittee becomes aware of the circumstances.*”

Comment 2:

Permit, p. 11, *S5.D Electrical Power Failure*

The permit requires “a backup power source sufficient to operate all vital components and critical lighting and ventilation during peak wastewater flow conditions”. The Permittee feels that the previous permit made no such requirement, forcing the facility to make an immediate upgrade or be in violation of their new permit.

Response to Comment 2:

The following has been added to Section S5.D: “*This requirement for a backup power source is effective December 1, 2003*”.

Comment 3:

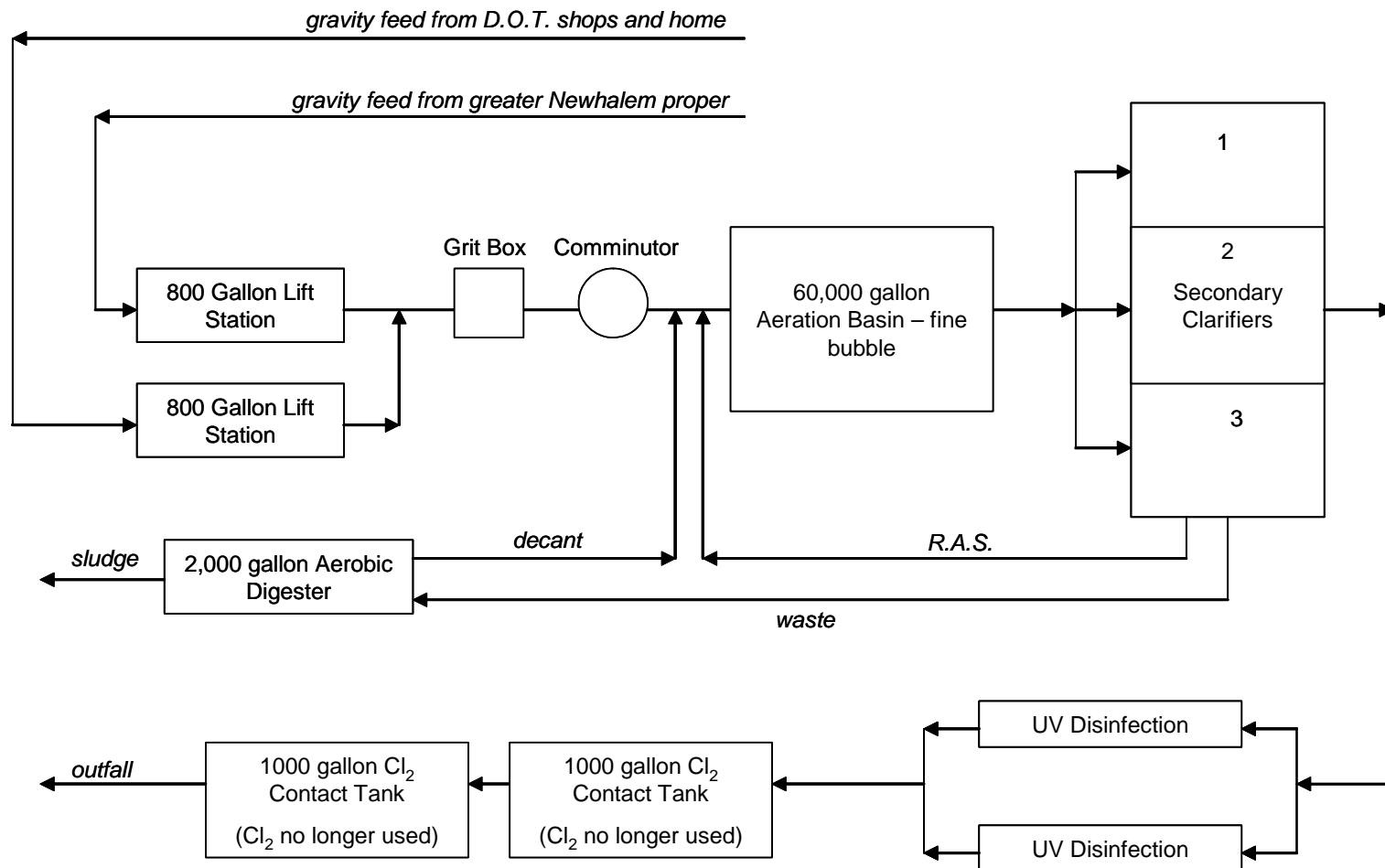
Fact Sheet, cover page. *Responsible Official*

James Ritch is currently the acting Superintendent.

Response to Comment 3:

The Fact sheet has been updated accordingly.

APPENDIX E -- LAYOUT OF NEWHALEM WASTEWATER TREATMENT PLANT

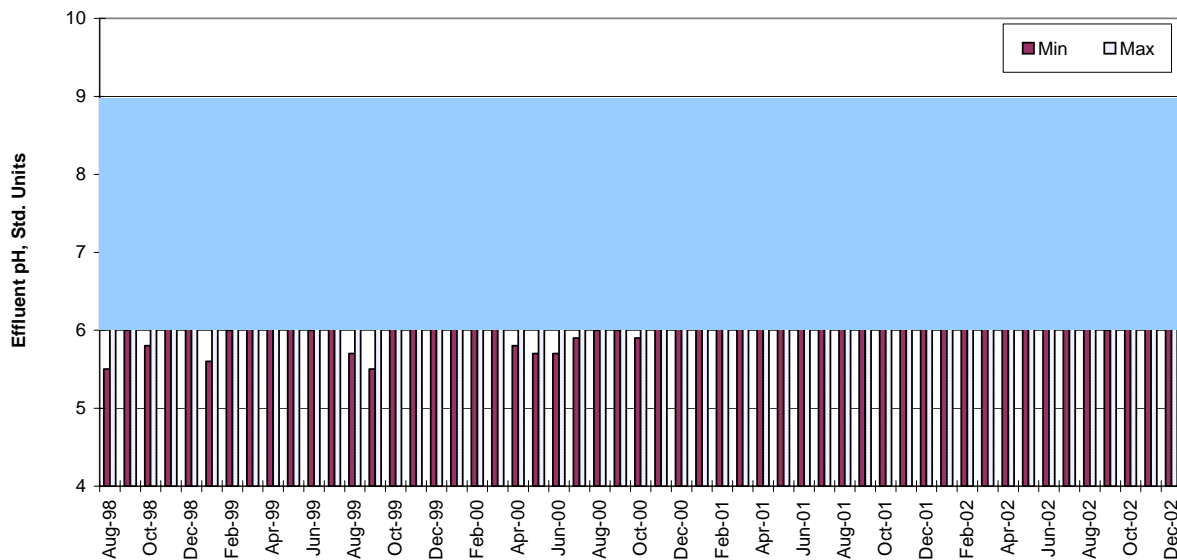
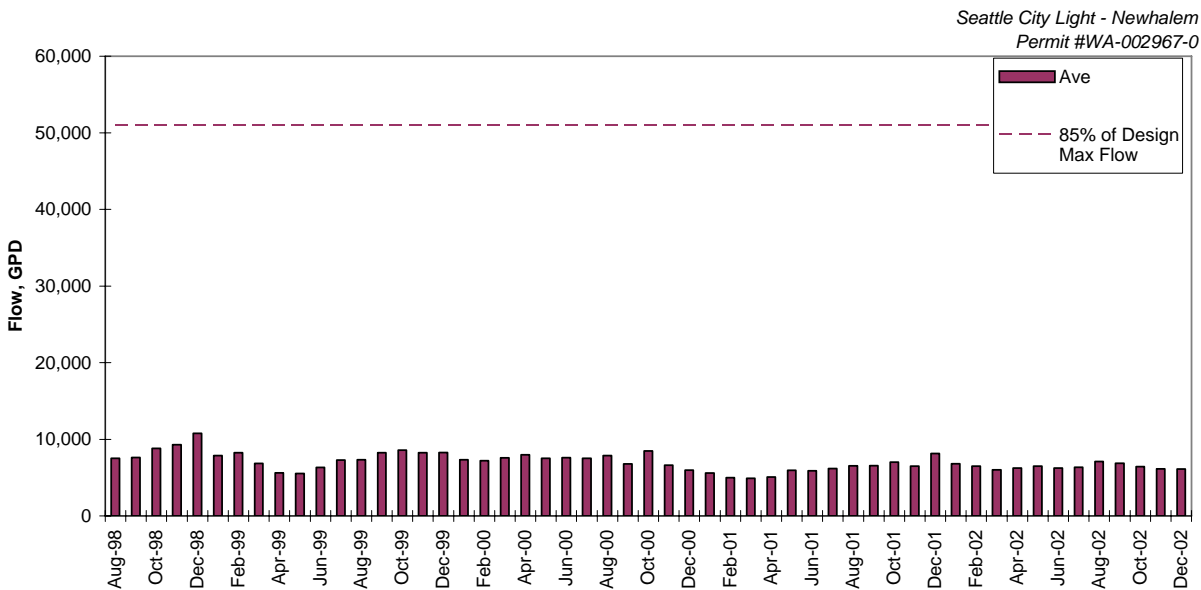


APPENDIX F -- NEWHALEM DATA, 1998 – 2002

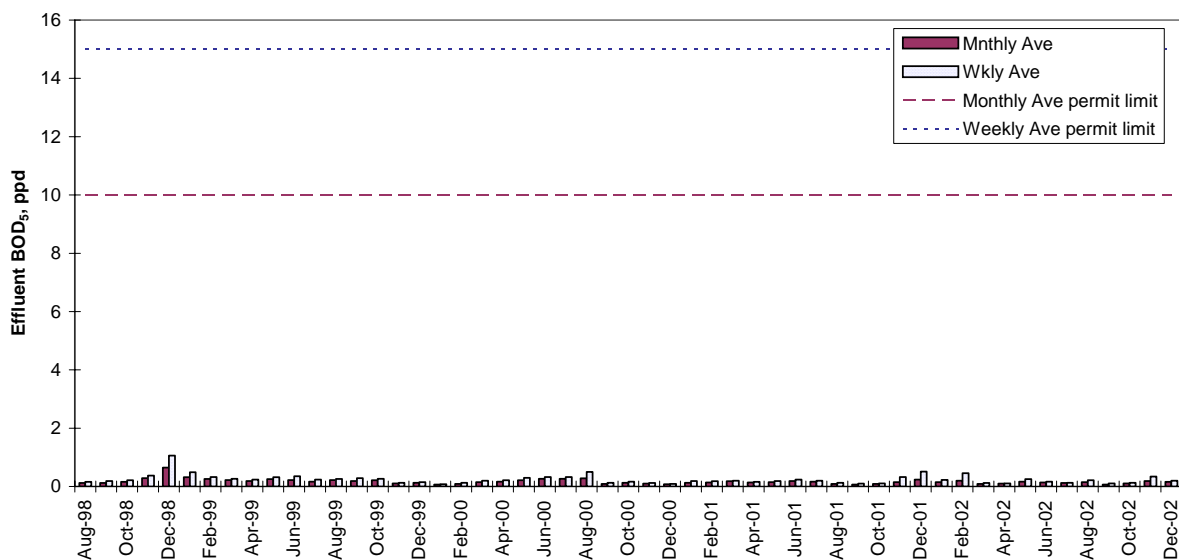
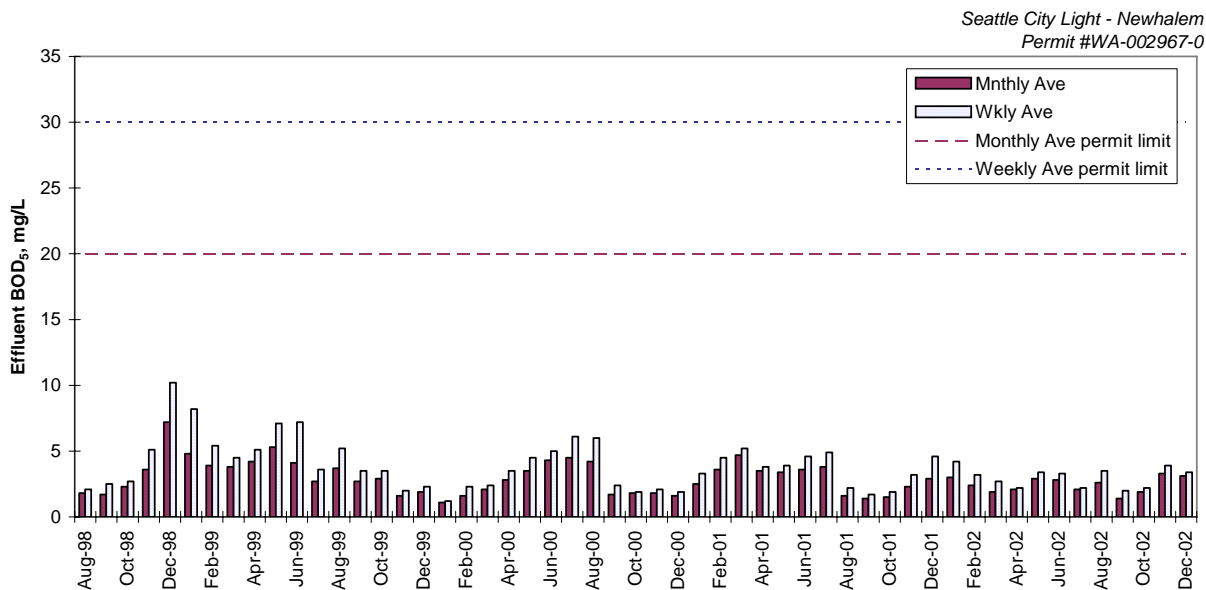
Facility: Seattle City Light - Newhalem
Permit No: WA-002967-0

Date	Influent								Effluent																			
	BOD, mg/L		BOD, mg/L		BOD, ppd		BOD, ppd		TSS, mg/L		TSS, mg/L		TSS, ppd		TSS, ppd		TSS, % Removal		PH		PH		Fecal Coliform, #/100 ml		Fecal Coliform, #/100 ml			
	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave	Mnthly Ave	Wkly Ave
1-Aug-98	304	343	20.5	24.4	349	417	22.2	27.8	7,528	1.8	2.1	0.1	0.2	99	4	5	0.23	0.34	99	5.5	7.3	2.6	24.0					
1-Sep-98	168	224	11.3	17.1	236	286	14.5	16.3	7,648	1.7	2.5	0.1	0.2	99	4	6	0.25	0.37	98	6.0	7.5	1.2	2.0					
1-Oct-98	126	201	8.3	12.4	189	289	13.6	20.3	8,825	2.3	2.7	0.2	0.2	98	6	9	0.46	0.76	97	5.8	7.2	1.4	3.0					
1-Nov-98	112	166	9.0	10.8	162	215	12.4	13.6	9,278	3.6	5.1	0.3	0.4	97	15	19	1.12	1.50	91	6.1	7.5	1.0	1.0					
1-Dec-98	192	261	22.8	64.1	181	201	17.8	39.2	10,782	7.2	10.2	0.7	1.1	96	25	30	2.15	2.86	86	6.3	7.1	2.2	8.0					
1-Jan-99	160	194	10.9	11.8	188	234	13.1	19.5	7,877	4.8	8.2	0.3	0.5	97	11	22	0.76	1.19	94	5.6	7.3	1.0	1.0					
1-Feb-99	155	165	10.7	12.0	183	206	13.0	16.7	8,238	3.9	5.4	0.3	0.3	97	15	19	1.06	1.48	92	6.0	7.2	1.0	1.0					
1-Mar-99	297	410	17.0	23.3	336	407	19.5	23.8	6,837	3.8	4.5	0.2	0.3	99	17	18	0.97	1.08	95	6.1	7.4	1.0	1.0					
1-Apr-99	248	393	11.3	18.8	401	470	19.3	22.6	5,643	4.2	5.1	0.2	0.2	98	19	28	0.96	1.40	95	6.2	7.3	1.0	1.0					
1-May-99	379	634	17.5	25.6	546	622	25.7	29.3	5,558	5.3	7.1	0.3	0.3	99	35	44	1.73	2.13	94	6.1	7.1	1.2	2.0					
1-Jun-99	402	485	21.8	25.7	626	798	33.8	41.5	6,327	4.1	7.2	0.2	0.4	99	24	28	1.23	1.38	96	6.0	7.2	3.3	19.0					
1-Jul-99	367	563	22.3	31.7	551	684	33.4	40.7	7,287	2.7	3.6	0.2	0.2	99	9	11	0.57	0.71	98	6.3	7.2	1.9	6.0					
1-Aug-99	362	444	22.1	30.9	509	582	31.0	34.4	7,351	3.7	5.2	0.2	0.3	99	11	14	0.69	0.82	98	5.7	7.2	2.4	31.0					
1-Sep-99	359	520	24.2	35.0	400	596	26.8	35.3	8,239	2.7	3.5	0.2	0.3	99	9	11	0.58	0.66	98	5.5	7.3	1.6	4.0					
1-Oct-99	378	551	26.3	37.1	529	619	37.3	46.5	8,589	2.9	3.5	0.2	0.3	99	11	13	0.76	0.94	98	6.2	7.4	4.2	9.0					
1-Nov-99	171	258	11.6	15.0	267	333	17.8	19.7	8,255	1.6	2.0	0.1	0.1	99	6	9	0.41	0.57	98	6.1	7.3	1.9	5.0					
1-Dec-99	231	296	15.2	16.7	255	274	17.0	21.1	8,268	1.9	2.3	0.1	0.2	99	6	10	0.44	0.78	98	6.3	7.4	1.0	1.0					
1-Jan-00	147	201	9.1	13.3	221	259	14.0	15.3	7,340	1.1	1.2	0.1	0.1	99	3	4	0.20	0.27	99	6.2	7.4	1.7	8.0					
1-Feb-00	209	259	12.1	15.0	172	199	10.5	13.9	7,195	1.6	2.3	0.1	0.1	99	5	7	0.33	0.42	97	6.2	7.4	2.2	23.0					
1-Mar-00	171	216	11.9	17.6	233	267	14.7	16.3	7,567	2.1	2.4	0.2	0.2	99	9	11	0.54	0.67	96	6.1	7.4	1.0	1.0					
1-Apr-00	225	239	13.5	14.9	244	267	16.8	19.7	7,979	2.8	3.5	0.2	0.2	99	11	13	0.78	1.09	95	5.8	7.4	1.6	7.0					
1-May-00	195	248	11.8	16.2	298	364	18.7	22.4	7,523	3.5	4.5	0.2	0.3	98	13	15	0.78	1.05	96	5.7	7.3	1.0	1.0					
1-Jun-00	218	315	13.6	19.0	290	376	18.5	22.0	7,609	4.3	5.0	0.3	0.3	98	10	13	0.62	1.01	97	5.7	7.3	1.7	4.0					
1-Jul-00	298	447	18.4	28.1	449	509	28.6	33.7	7,520	4.5	6.1	0.3	0.3	98	11	15	0.69	0.88	98	5.9	7.2	2.0	15.0					
1-Aug-00	307	458	20.2	31.5	469	854	31.4	58.8	7,867	4.2	6.0	0.3	0.5	99	26	42	1.72	2.58	94	6.0	7.3	1.6	3.0					
1-Sep-00	249	307	13.9	16.7	366	453	21.0	25.8	6,803	1.7	2.4	0.1	0.1	99	10	15	0.57	0.79	97	6.0	7.3	1.0	1.0					
1-Oct-00	224	243	16.3	20.5	283	306	20.1	24.8	8,472	1.8	1.9	0.1	0.2	99	10	11	0.75	0.95	96	5.9	7.4	1.7	4.0					
1-Nov-00	302	439	17.6	26.1	363	536	20.1	28.9	6,604	1.8	2.1	0.1	0.1	99	10	13	0.54	0.75	97	6.5	7.3	1.3	3.0					
1-Dec-00	318	389	15.8	18.7	380	426	18.3	19.6	5,986	1.6	1.9	0.1	0.1	99	9	11	0.46	0.56	98	6.9	7.3	1.0	1.0					
1-Jan-01	330	379	16.6	19.1	400	443	19.4	25.0	5,591	2.5	3.3	0.1	0.2	99	13	17	0.66	0.94	97	6.9	7.2	1.0	1.0					
1-Feb-01	268	354	10.3	14.0	302	324	12.7	14.5	4,987	3.6	4.5	0.1	0.2	99	12	18	0.53	0.78	96	7.0	7.7	1.0	1.0					
1-Mar-01	248	293	9.9	12.6	334	388	13.8	16.1	4,916	4.7	5.2	0.2	0.2	98	16	21	0.66	0.82	95	6.9	7.2	1.0	1.0					
1-Apr-01	362	460	14.4	17.0	375	434	15.7	17.6	5,072	3.5	3.8	0.1	0.2	99	13	14	0.55	0.58	97	6.8	7.2	1.0	1.0					
1-May-01	385	511	17.8	24.4	404	515	20.2	29.1	5,941	3.4	3.9	0.2	0.2	99	11	13	0.57	0.82	97	6.5	7.2	1.0	1.0					
1-Jun-01	415	451	22.0	24.7	484	553	24.1	28.0	5,881	3.6	4.6	0.2	0.2	99	16	20	0.79	0.99	97	6.5	7.4	1.2	2.0					
1-Jul-01	616	798	29.1	39.7	629	692	32.1	35.2	6,179	3.8	4.9	0.2	0.2	99	19	27	0.94	1.36	97	6.3	7.2	1.7	8.0					
1-Aug-01	347	447	20.3	28.0	488	697	26.5	41.4	6,522	1.6	2.2	0.1	0.1	100	9	11	0.47	0.59	98	6.3	7.1	2.2	8.0					
1-Sep-01	263	365	14.6	20.9	341	405	18.4	22.2	6,564	1.4	1.7	0.1	0.1	99	6	7	0.34	0.41	98	6.7	7.2	1.3	3.0					
1-Oct-01	236	297	13.5	17.0	223	296	13.1	16.7	7,022	1.5	1.9	0.1	0.1	99	6	7	0.33	0.38	98	6.8	7.1	1.1	2.0					
1-Nov-01	286	649	17.4	32.1	326	534	18.8	26.8	6,505	2.3	3.2	0.2	0.3	99	6	8	0.32	0.37	98	6.9	7.2	1.0	1.0					
1-Dec-01	305	394	23.5	40.1	343	634	22.4	43.4	8,146	2.9	4.6	0.2	0.5	99	12	14	0.94	1.63	96	6.9	7.3	1.0	1.0					
1-Jan-02	420	722	21.2	36.1	628	970	36.6	51.7	6,827	3.0	4.2	0.2	0.2	99	14	16	0.85	1.11	98	6.7	7.2	1.0	1.0					
1-Feb-02	549	836	38.4	58.1	722	1202	36.8	54.0	6,494	2.4	3.2	0.2	0.5	100	13	16	0.74	0.87	98	6.8	7.1	1.9	13.0					
1-Mar-02	346	588	16.4	29.1	621	970	32.9	51.5	6,019	1.9	2.7	0.1	0.1	99	13	16	0.72	1.09	98	6.7	7.0	1.2	2.0					
1-Apr-02	189	258	9.7	15.3	291	445	14.8	22.9	6,235	2.1	2.2	0.1	0.1	99	11	13	0.55	0.69	96	6.7	7.1	1.2	2.0					
1-May-02	331	432	19.6	31.7	433	518	23.2	26.3	6,508	2.9	3.4	0.2	0.3	99	12	15	0.67	0.84	97	6.6	7.0	1.2	3.0					
1-Jun-02	455	685	23.7	41.3	525	903	27.2	50.3	6,235	2.8	3.3	0.1	0.2	99	12	14	0.58	0.72	98	6.6	7.2	2.3	30.0					
1-Jul-02	211	245	11.8	14	371	524	19.6	29.5	6,369	2.1	2.2	0.1	0.1	99	6	7	0.31	0.39	98	6.5	7.2	1.0	1.0					
1-Aug-02	447	617	25.3	33.9	743	1060	40.3	59.8	7,103	2.6	3.5	0.2	0.2	99	6	8	0.34	0.42	99	6.4	7.0	1.0	1.0					
1-Sep-02	192	247	9.8	13.1	334	363	19.6	26.5	6,887	1.4	2.0	0.1	0.1	99	6	10	0.38	0.76	98	6.0	7.3	1.0	1.0					
1-Oct-02	204	284	11.6	18.6	326	695	18.9	44.4	6,431	1.9	2.2	0.1	0.1	99	7	9	0.38	0.45	98	6.6	7.0	1.0	1.0					
1-Nov-02	267	532	14.2	24.0	323	501	16.7	23.3	6,149	3.3	3.9	0.2	0.3	99	10	11	0.53	0.69	97	6.8	7.3	2.1	18.0					
1-Dec-02	211	260	10.5	14.6	280	353	14.0	15.9	6,136	3.1	3.4	0.2	0.2	99	11	13	0.56	0.65	96	6.7	7.2	1						

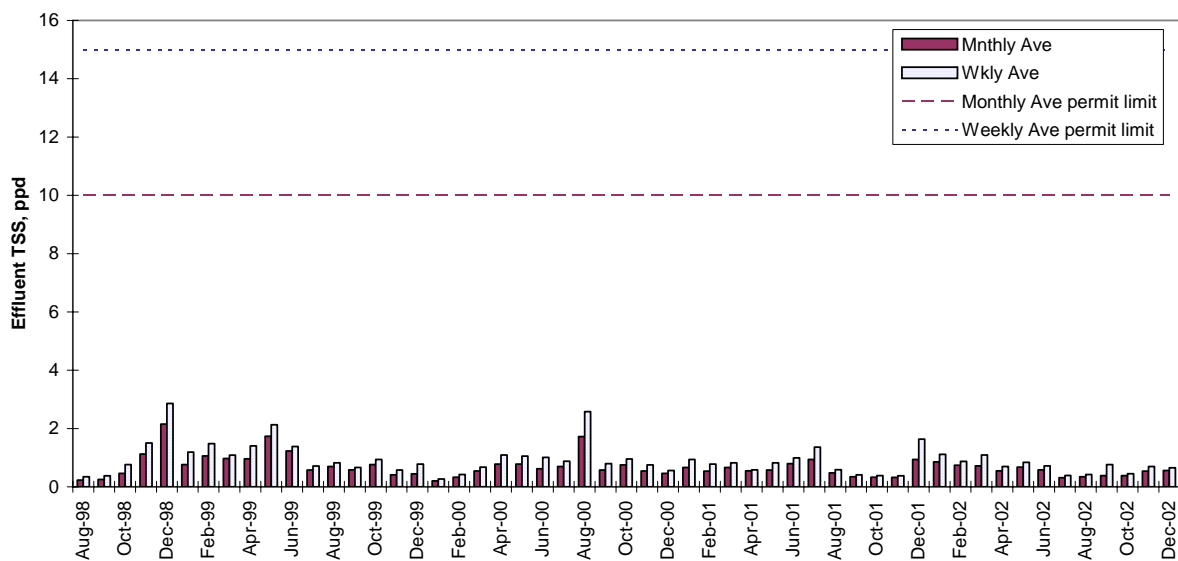
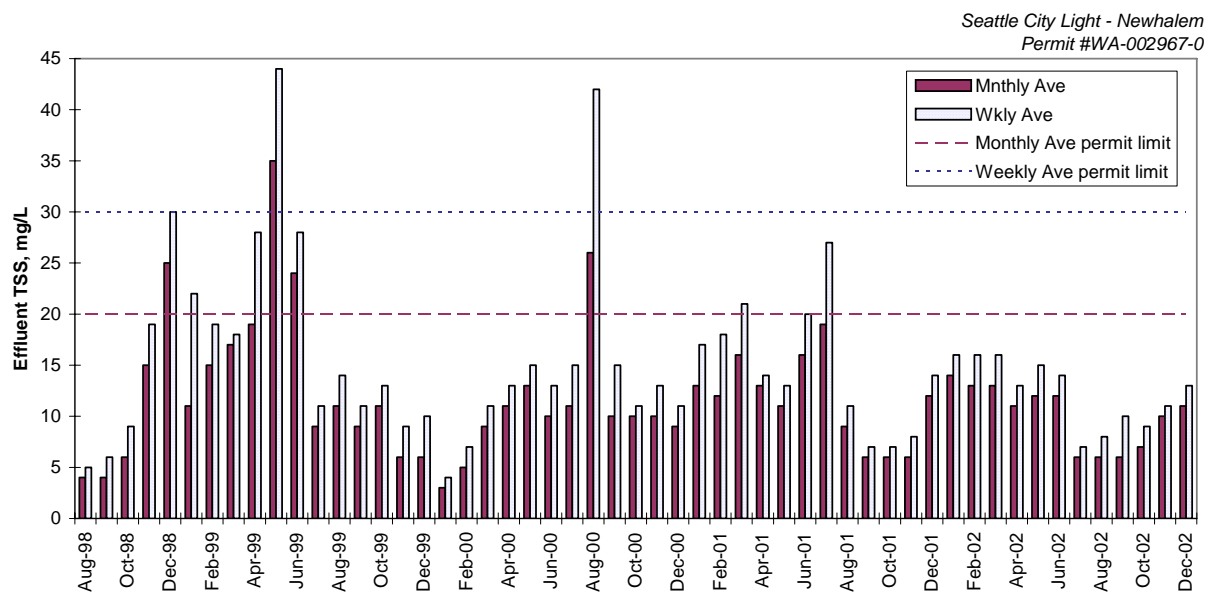
APPENDIX F (cont'd) -- NEWHALEM EFFLUENT DATA, 1998 – 2002



APPENDIX F (cont'd) -- NEWHALEM EFFLUENT BOD₅ DATA, 1998 – 2002



APPENDIX F (cont'd) -- NEWHALEM EFFLUENT TSS DATA, 1998 – 2002



APPENDIX F (cont'd) -- NEWHALEM EFFLUENT FECAL COLIFORM, 1998–2002

